



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/762,497	04/20/2001	Shojiro Kawakami	FUK-81	4970

22855 7590 07/02/2002

RANDALL J. KNUTH P.C.  
3510-A STELLHORN ROAD  
FORT WAYNE, IN 46815-4631

EXAMINER

CURTIS, CRAIG

ART UNIT	PAPER NUMBER
----------	--------------

2872

DATE MAILED: 07/02/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/762,497

Applicant(s)

KAWAKAMI et al.

Examiner

Craig Curtis

Art Unit

2872



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on Feb 7, 2001
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some\* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 3, 8 6) ☐ Other:

Art Unit: 2872

## *DETAILED ACTION*

### *Acknowledgment*

1. Receipt is acknowledged of foreign priority papers submitted under 35 U.S.C. 119, which papers have been placed of record in the file as paper no. 7.

### *Claim Objections*

2. Claim 2 is objected to because of the following informalities: Applicants' use of the modifiers "more" and "less," respectively, in the description of the refractive characteristic of said layers is misdescriptive. Although it is likely that Applicants intended to distinguish between the refractive indexes of the claimed component layers of the polarizers (i.e., Si or  $\text{TiO}_2$  &  $\text{SiO}_2$ , respectively), the "more" and "less" terminology gives rise to the possibility that the modifiers refer not to the claimed layers but, rather, to one or more as-yet-unidentified layer material (s). Appropriate correction is required.

Art Unit: 2872

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention.

More specifically, it is not inevitable that a polarizer would result by providing just ANY two or more transparent bodies which have different refractive indexes together in the manner set forth by Applicants in the claims.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kawakami et al.'s Fabrication and Observation of 3D Photonic Crystals Composed of Si/SiO<sub>2</sub> with Sub-Micrometer Periods.

Kawakami et al. disclose (see Fig. 1) the invention as claimed, a polarizer and method steps for producing a polarizer comprising:

Art Unit: 2872

a multilayered structure along z-axis consisting of two or more transparent bodies which have different refractive indexes (Fig. 1:  $\text{Si/SiO}_2$  ( $n=1.46$ );  $\text{Si}$  ( $n=3.24$ )) ;

wherein the shape of the layers which is the unit of lamination of each transparent body has a regularly undulated structure along the x-axis, is uniform along the y-axis, or has regularly or non-regularly undulated structure which is larger than the x-axis (see Fig. 1); and

lamination along the z-axis repeating the shape, and acts against the light which has a component whose incidence direction is not zero from the z-axis in the three-dimensional orthogonal coordinates (x, y, z) (see Fig. 1);

wherein the polarizer has a more refractive medium layer containing one of Si and  $\text{TiO}_2$  as a main component and a less refractive medium layer containing  $\text{SiO}_2$  as a main component (see Fig. 1);

said method for producing a comprising the steps of:

laminating a more refractive medium and a less refractive medium with a regularly repeating shape by a film-forming method at least partly including the dry etching on a substrate which has at least one of regularly arranged grooves or regularly arranged linear projections or thin and long projections or thin and long grooves (see Fig. 1, entire document);

laminating a more refractive medium which contains one of Si or  $\text{TiO}_2$  as a main component and a less refractive medium which contains  $\text{SiO}_2$  as a main component with regularly repeating the shape by a film-forming method at least partly including the dry etching on a substrate which has at least one of regularly arranged grooves or regularly arranged linear projections or thin and long projections or thin and long grooves (see Fig. 1, entire document).

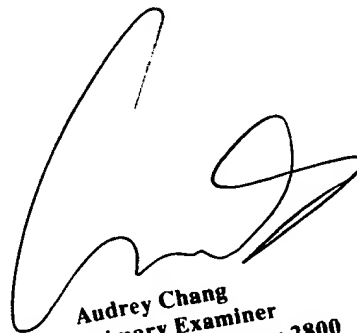
Art Unit: 2872

### *Contact Information*

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig Curtis, whose telephone number is (703) 305-0776. The facsimile phone number for Art Unit 2872 is (703) 308-7721.

Any inquiry of a general nature regarding the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

*Craig H. Curtis*  
Craig H. Curtis  
Group Art Unit 2872  
27 June 2002

  
**Audrey Chang**  
**Primary Examiner**  
**Technology Center 2800**